(19) World Intellectual Property Organization

International Bureau





(43) International Publication Date 12 August 2004 (12.08.2004)

PCT

(10) International Publication Number WO 2004/068800 A1

(51) International Patent Classification⁷: 29/06

H04L 12/56,

(21) International Application Number:

PCT/EP2003/000850

(22) International Filing Date: 28 January 2003 (28.01.2003)

(25) Filing Language:

English

(26) Publication Language:

English

- (71) Applicant (for all designated States except US): TELE-FONAKTIEBOLAGET LM ERICSSON (publ) [SE/SE]; S-164 83 Stockholm (SE).
- (72) Inventors; and
- (75) Inventors/Applicants (for US only): WIEMANN, Henning [DE/DE]; Monheimsallee 29, 52062 Aachen (DE). EKSTRÖM, Hannes [SE/DE]; Ludwigsallee 55, 52062 Aachen (DE).
- (74) Agents: HOFFMANN EITLE et al.; Arabellastrasse 4, 81925 München (DE).

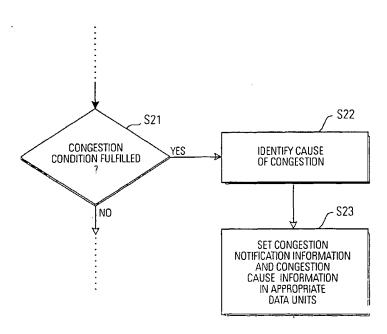
- (81) Designated States (national): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.
- (84) Designated States (regional): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

with international search report

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: METHOD AND DEVICE FOR CONGESTION NOTIFICATION IN PACKET NETWORKS INDICATING SEVERAL DIFFERENT CONGESTION CAUSES



(57) Abstract: A device for routing data units in a network, and a method of controlling a device for routing data units in a network, where the device 1 is capable of identifying one or more causes of congestion in the routing device and capable of setting congestion cause information in one or more forwarded data units.



2004/068800 A1



PCT/EP 03/00850

Relevant to daim No.

A. CLASSIFICATION OF SUBJECT MATTER IPC 7 H04L12/56 H04L29/06

C. DOCUMENTS CONSIDERED TO BE RELEVANT

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 HO4L

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

Citation of document, with indication, where appropriate, of the relevant passages

EPO-Internal, INSPEC, WPI Data, PAJ, COMPENDEX

| A | EP 1 045 546 A (AT & T CORP) 18 October 2000 (2000-10-18) the whole document | | 1-25 | | | | | |
|---|---|---|--|--|------------|--|--|-------------|
| A | WO 01 97446 A (NOKIA CORP ;NO) 20 December 2001 (2001-12-20) the whole document | KIA INC (US)) | 1-25 | | | | | |
| A | WO 00 65782 A (MA JIAN ;FEI PR NOKIA NETWORKS OY (FI)) 2 November 2000 (2000-11-02) the whole document | ENG (CN); | 1-25 | | | | | |
| | | -/ | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | • | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| X F | urther documents are listed in the continuation of box C. | X Patent family members are listed | in annex. | | | | | |
| ° Special | categories of cited documents : | "T" later document published after the Inte | ernational filing date | | | | | |
| con | ment defining the general state of the art which is not sidered to be of particular relevance | or priority date and not in conflict with cited to understand the principle or th invention | the application but | | | | | |
| "E" earlie | er document but published on or after the international g date | "X" document of particular relevance; the cannot be considered novel or canno | claimed invention | | | | | |
| "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) "O" document referring to an oral disclosure, use, exhibition or other means "P" document published prior to the international filing date but later than the priority date claimed | | "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is taken alone "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art. "&" document member of the same patent family | | | | | | |
| | | | | | Date of ti | he actual completion of the International search | Date of mailing of the international sea | arch report |
| | | | | | | 11 September 2003 | 3 0. 09. 2003 | |
| | | A 11-14 1-17 | ************************************** | | | | | |

Authorized officer

MARIANNE ENGDAHL/JAA

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016



Internat Pilication No PCT/EP 03/00850

| (Continu | ation) DOCUMENTS CONSIDERED TO BE RELEVANT | | |
|------------|---|-----------------------|--|
| Category ° | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. | |
| A | RAMANI R ET AL: "Explicit congestion notification (ECN) in TCP over wireless network" 2000 IEEE INTERNATIONAL CONFERENCE ON PERSONAL WIRELESS COMMUNICATIONS. CONFERENCE PROCEEDINGS (CAT. NO.00TH8488), PROCEEDINGS OF IEEE INTERNATIONAL CONFERENCE ON PERSONAL WIRELESS COMMUNICATIONS (ICPWC), HYDERABAD, INDIA, 17-20 DEC. 2000, pages 495-499, XP002254173 2000, Piscataway, NJ, USA, IEEE, USA ISBN: 0-7803-5893-7 the whole document | 1-25 | |
| 4 | KOSTAS PENTIKOUSIS ET AL: "An Evaluation of TCP with Explicit Congestion Notification" INTERNAL CONFERENCE ON PERSONAL WIRELESS COMMUNICATIONS, IEEE ICPWC 2000, XP002254174 | 1-25 | |
| | the whole document | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | · | |
| | | | |
| | | | |
| | | , | |



| 4 | | |
|---------|------------|--|
| Interna | ication No | |
| PCT/EP | 03/00850 | |

| | ent document n search report | | Publication date | | Patent family member(s) | Publication date |
|------|---------------------------------|-----|------------------|----------------------------|---|--|
| EP 1 | 1045546 | . A | 18-10-2000 | CA EP US | 2301435 A1 1045546 A2 2003137938 A1 | 16-10-2000 18-10-2000 24-07-2003 |
| WO (| 9197446 | Α | 20-12-2001 | AU WO | 7436901 A 0197446 A2 | 24-12-2001 20-12-2001 |
| WO (| 9065782 | A | 02-11-2000 | WO AU CA DE GB | 0065782 A1 4034299 A 2372023 A1 19983951 T0 2364615 A | 02-11-2000 10-11-2000 02-11-2000 10-10-2002 30-01-2002 |